Unique Local IPv6 Unicast Addresses

A review from an RIR perspective

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Background

- IPv6 address architecture includes the requirement for local use addresses that are:
  - Useable in a local (non-connected context)
  - Span more than a link
  - Are not components of a provider aggregate address block
  - Not intended to be globally routed
  - Unique (no NATS!)
  - Unicast addresses

Local Use Addresses

- The IETF Working Group is considering alternatives to Site-Local Addresses

   (This presentation is not intended to be a repeat of the Site-Local debate!)

- One proposal is to use a block of the Global Unicast Address space for "local" use

  - Where "local" implies "not anticipated to be globally routed"
  - See "draft-hunden-ipv6-global-local-addr-02.txt" for the complete text of the proposal

Questions Raised by the Proposal

- What are the desireable characteristics of Local Use addresses?
- What distribution mechanisms are called for?
- Is there a role for the RIRs here?
- If so what issues would this raise for the RIRs to consider?

Characteristics of Local Use Addresses

1. Exclusive use of a common prefix drawn from the global unicast address space for all local use addresses (FC00::/7)
2. Unique assignment of a fixed size local use address block (/48) from within the pool of addresses defined by this prefix, using a Global ID as the block prefix.
3. There is no internal structure within the global ID, and these global IDs cannot be aggregated in a routing context.
4. The assignment information must be recorded and stored in a reliable manner.
5. Local Use Addresses are not intended to be passed within the global routing environment

The Proposal

- Use /48 blocks drawn from FC00::/7

An End user may either:

  use a random number pick to draw a /48 block from FC00::/8

or:

  obtain a unique /48 block from a registry that manages FD00::/8

A Local Use Registry System

A Local Use Registry system should be:
- Readily accessible for anybody
- Highly automated
- No justification required
- Limited identity requirement
- Rapid turnaround
- Inexpensive
- Allocate randomly from the block
- Transparency of charges
- Allow for once-and-forever allocation services
- Allow for agency structures
- Reliable and enduring records of unique allocations
- Limited publication of allocations

RIR Considerations

- Service model (renewable, non-renewable)
- Transaction model rather then membership based
- Service fees to be cost-based
- Record management
- High volume low value transaction model
- Preserve Local Use Address Characteristics (non-aggregatable, no public per-allocation records, stable allocations, non-hoardable)
- Regulatory issues (competition, fee setting, equal access)

RIR Considerations

- This can be seen as a distinct service activity, not a seamless adjunct to existing activities:
  - Transactions, not membership
  - High volume, low value
  - Automated applications without evaluation
  - Limited publication of allocations
- Considerations:
  - Local agency activities?
  - Wholesaling?
  - Transfers?
  - ?